

Are Junior High Schools Undermining the Academic Motivation of Early
Adolescents?

Jacquelynne S. Eccles,
University of Colorado

Carol Midgley, Allan Wigfield, David Reuman, Douglas Mac Iver,
and Harriet Feldlaufer
The University of Michigan

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For some children, the early adolescent years mark the beginning of a downward spiral in school-related behaviors and motivation that often lead to academic failure and school drop-out. For example, Simmons & Blyth (1987) found a marked decline in early adolescents' school grades as they move into junior high school. Furthermore, the magnitude of this decline was predictive of subsequent school failure and drop out. Similarly timed developmental declines have been documented for such motivational constructs as: interest in school (Epstein & McPartland, 1976); intrinsic motivation (Harter, 1982); self-concepts/self-perceptions (Eccles, Midgley, & Adler, 1984; Simmons, Blyth, Van Cleave, & Bush, 1979), and confidence in one's intellectual abilities, especially following failure (Parsons & Ruble, 1977). There are also reports of age-related increases during early adolescence in such negative motivational and behavioral characteristics as test anxiety (Hill, 1980), learned helpless responses to failure (Rholes, Blackwell, Jordan, & Walters, 1980), focus on self-evaluation rather than task mastery (Nicholls, 1980), and both truancy and school drop out (Rosenbaum, 1976; See Eccles, Midgley, & Adler, 1984 for full review). Although these changes are not extreme for most adolescents, there is sufficient evidence of gradual decline in various indicators of academic motivation, behavior, and self-perception over the early adolescent years to make one wonder what is happening (see Eccles & Midgley, 1988 for review).

A variety of explanations have been offered to explain these negative changes: Some have suggested that declines such as these result from the intrapsychic upheaval assumed to be associated with early adolescent development (e.g. Blos, 1965). Others have suggested that it is the coincidence of the timing of the junior high school transition with pubertal development that accounts for the decline (e.g. Blyth, Simmons & Carlton-Ford, 1983; Simmons &

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Blyth, 1987). Drawing upon cumulative stress theory, these theorists suggest that declines in motivation result from the fact that adolescents making the transition to junior high school at the end of grade six must cope with two major transitions: pubertal change and school change. And since coping with multiple transitions is more difficult than coping with only one, these adolescents are at greater risk of negative outcomes than adolescents who only have to cope with pubertal change during this developmental period.

Similarly, Eccles and her colleagues have suggested that the changing nature of the educational environments experienced by many early adolescents is a plausible explanation for the declines associated with the junior high school transition (Eccles, Midgley, & Adler, 1984; Eccles & Midgley, 1988). Drawing upon Person-Environment Fit theory (see Hunt, 1975, Mitchell, 1969), Eccles and Midgley (1988) proposed that these motivational and behavioral declines could result from the fact that junior high schools are not providing appropriate educational environments for early adolescents. More specifically, Eccles and Midgley (1988) are suggesting that the declines in motivation and behavior are linked to the characteristics of the educational environments to which early adolescents are exposed. This perspective is elaborated in this paper. Several investigators have stressed how crucial the early adolescent years are for individual development (Hamburg, 1974). At the same time, many have bemoaned the quality of the junior high school environment: for example, according to Charles Silberman (1970), "the junior high school, by almost unanimous agreement, is the wasteland - one is tempted to say cesspool - of American education" (pg.324). What is likely to happen when we put adolescents into these "wastelands"? This question is the focus of this article. Our goal is to use a variation of the classic Person-Environment Fit paradigm to understand the

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developmental declines in motivation associated with the transition to junior high school.

According to most theories, motivation, broadly defined, is influenced by both individual characteristics linked to psychological motivation, such as motivational orientation, confidence, and long and short terms goals, and characteristics of the classroom such as instructional style, classroom climate, and curricular demands. But, in keeping with person-environment theory, we will argue that motivation can be even better understood if we look at the interaction between the characteristics the individual brings to the classroom and the characteristics of the educational environment. More specifically, we will argue that the fit between the needs and motivational orientation of the students on the one hand, and the demands and characteristics of the school/classroom environment on the other, influences student motivation. Finally, using a developmental approach to person-environment fit, we will argue that there is a mismatch between the developing needs of early adolescent students and the typical kinds of environmental changes they experience when they make the transition to junior high school. In essence, we are suggesting that there is a poor fit between the developmental stage of the students and the educational environments we provide for them during the early adolescent period.

Before discussing these interrelationships, it is important that we define what we mean by the term motivation. Table 1 illustrates four approaches to the definition of motivation. In this article, we focus on those motivational constructs linked to the middle two questions: Can I succeed? and Do I want to succeed?

INSERT TABLE 1

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Since the importance of both of these sets of motivational constructs for understanding individual differences in school achievement and choice has been amply documented, we will not justify the choice of these particular variables (see Eccles & Wigfield, 1985 and Eccles, Adler, Futterman, Goff, Kaczala, Meece, & Midgley, 1983). It should be noted, however, that these two sets of motivational constructs may be sensitive to different environmental characteristics and may have differential effects on various achievement-related behaviors and outcomes. For example, we have tested the longitudinal impact of confidence in one's math abilities and subjective value of math on both course grades and enrollment decisions. Confidence seems to have its most powerful impact on performance measures such as course grades and standardized test scores. In contrast, subjective task value seems to have its most powerful impact on intentions to enroll and on actual enrollment decisions (Eccles, Adler, & Meece, 1984).

Similarly, a given classroom characteristic should have different consequences on various motivational constructs especially in interaction with individual student characteristics. For example, providing students with some choice over their activities in the classroom and reducing teacher control may increase subjective task value without influencing ability concepts and sense of efficacy. In contrast, assigning students to classrooms on the basis of their ability may lower the confidence of high ability students while, at the same time, increasing the challenge value of the material being presented. Examples of both of these types of effects are included in this paper.

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Student Motivation and Classroom Environment Interactions: Junior High School Transition Effects

Let us now turn to the early adolescent period as a case study of the importance of the person-environment fit perspective in understanding academic motivation. In this section we briefly review the evidence of developmental changes in motivation, interest, and self-perception, and of structural and environmental changes students often confront when they move into a traditional junior high school. We end with a model for understanding the motivational changes that builds on the person-environment fit perspective and adds the notion of developmental stage-environment fit. In the next section, we summarize our own findings as an initial assessment of this model's utility as an analytic tool for guiding research into developmental changes in academic motivation.

General Developmental Changes

Several investigators suggest that there are general developmental declines in such motivational constructs as: interest in school (Epstein & McPartland, 1976); intrinsic motivation (Harter, 1982); and self-concepts (Eccles, Midgley, & Adler, 1984; Simmons, Blyth, Van Cleave, & Bush, 1979). The major changes are listed in Table 2 (see Eccles et al., 1984 and Eccles & Midgley, 1988). Some of these changes vary across subject areas. For example, Figure 1 illustrates the changes in fifth through twelfth grade students' ratings of their own ability, the value they attach to the subject area, and their perceptions of the difficulty of the subject area for both math and English. As you can see, the general decline in these motivational attitudes is only characteristic of math.

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INSERT TABLE 2 AND FIGURE 1

Declines Associated with Junior High School Transition

Although studies of developmental changes in motivation during the early adolescent period are not entirely consistent, several studies report marked changes in conjunction with the junior high school transition, leading several researchers to suggest that school transitions at this period of life may have especially negative consequences for at least some early adolescents. For example, our data (see Figure 1) indicate a marked discontinuity in the rate of change in attitudes toward math between grades six and seven when the children moved from elementary school to junior high school. Similar discontinuities are evident in the work of Harter (1981, 1982) and Simmons and her colleagues (e.g. Simmons and Blyth, 1987). Harter (1981), for example, reports a sharp drop in students' preference for challenge and for independent mastery between the sixth and the seventh grade - before and after the transition to junior high school.

The possible negative impact of school transition at this period is illustrated best by the work of Simmons and her colleagues who have compared children moving from sixth to seventh grade in a K-8 system to children making the same transition in a K-6, 7-9, 10-12 school system. This work allows us to separate the conjoint effects of age and transition operating in most developmental studies of this age period. These researchers find clear evidence of school transition effects but the exact nature of these effects, and the groups of students most affected, varies somewhat across studies. In general, however, girls seem more at risk for negative consequences of the junior high school transition than boys. For example, in Simmons and Blyth (1987), girls moving into a traditional junior high

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school show a more marked decline in their self-esteem than girls who remain in the same school building; no comparable school transition effect was found for boys' self-esteem.

These studies, and others like them, suggest that something unique may be going on during early adolescence, and that it interacts with the nature of school transitions in affecting the motivation of early adolescents. Several investigators have suggested just such a link between these motivational declines and the junior high school transition (Blyth, Simmons, & Carlton-Ford, 1983; Eccles et al., 1984; Eccles & Midgley, 1988; Simmons & Blyth, 1987). Simmons and her colleagues proposed the first such hypothesis. Given the sex difference in the transition effect, they focused on the timing issue. Drawing on cumulative stress theory, they argued that the timing of the transition to junior high school should result in more disruption to individuals already undergoing the stress associated with pubertal development than would a similar transition a few years later "after the individual has developed a more mature sense of who he or she is" (Blyth et al., 1983, p. 106).

If the timing of the transition is the critical factor, then when is the timing good or bad and for whom? Investigators who have sought to replicate and extend Simmons' work have compared the effects of school transitions at different grade levels. The results of these studies are largely inconsistent and inconclusive. Thornburg and Jones (1982) compared students who moved up a grade level within the same school to students who entered a new school structure. Students who moved to a new school at sixth grade had lower self-esteem than sixth grade students who did not make a school transition, while at seventh grade there were no significant differences in self-esteem for groups that did or did not make a school transition. They conclude that school transitions occurring at lower grade

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levels are more likely to affect early adolescent self-esteem than school transitions at higher grade levels. Nottelmann (1987) conducted a longitudinal study comparing the effects on self-esteem of movement from grades five to six, and grades six to seven in both transition and non-transition groups. She predicted that there would be less disturbance following the earlier school transition because the children would not be experiencing the simultaneous stress of physical development and movement to a new school environment. Not only was this hypothesis not substantiated, but in contrast to the Simmons and Blyth findings, she found that self-esteem was higher in transition groups than in non-transition groups. Petersen, Ebata, & Graber (1987) came up with the remarkable finding that children who make two consecutive school transitions experience greater long term gains in self-image than children who make a single transition from fifth to sixth or sixth to seventh.

Why are these findings so inconsistent? Perhaps because the studies do not take into account the nature of the school environment before and after the transition. For example, the children in one study may be moving into a less facilitative environment than children in another study. How did the junior high school environment in the Simmons and Blyth study, for example, compare to the middle and junior high school environment in the Nottelmann study? Was there something about the junior high school classroom environment in the Simmons and Blyth study that was particularly detrimental to pubertal girls? Perhaps there was an increase in competition or ability assessment that contributed to the effects and perhaps this was not the case in the Nottelmann study. Although questions such as these are not answerable at this point, they are critical to our understanding of the impact of educational transitions on early adolescents.

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We believe that the nature of the transition, as well as the timing must be considered. In addition, we believe that the kinds of changes that children normatively experience during the transition to junior high school must be viewed from at least two perspectives: the standard environmental influences approach and a developmental variant on the person-environment fit paradigm, or as we have termed it, the "stage/environment fit" approach (see Eccles & Midgley, 1988). Let us discuss each of these in turn.

General Environmental Influences

Work in a variety of areas has documented the impact of various classroom and school environmental characteristics on motivation. For example, the big school/small schools literature has demonstrated the motivational advantages of small schools especially for marginal students (Barker & Gump, 1964). Similarly, the teacher efficacy literature has documented the positive student motivational consequences of high teacher efficacy (Brookover, Beady, Flood, Schweitzer, & Wisenbaker, 1979). Finally, organizational psychology has demonstrated the importance of participatory work structures on worker motivation (Lawler, 1976; Porter & Lawler, 1965). The list of such influences could be quite long, and discussing them all is beyond the scope of this paper. The point is that there may be systematic differences between typical elementary classrooms and schools, and typical middle school and/or junior high classrooms and schools; and these differences may account for some of the motivational changes we see in early adolescents as they make the transition. If so, then some of the motivational problems we see at early adolescence may be a consequence of the type of school environment changes we force them to adapt to rather than to characteristics of the developmental period per se.

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Stage/Environment Fit.

A potentially more interesting analysis of the possible environmental causes of the motivational changes associated with the junior high school transition draws on the person/environment fit perspective. According to this perspective, there are negative motivational consequences of being in an environment that does not fit well with one's needs (Hunt, 1975; Lewin, 1935; Murray, 1938). At the most basic level, this perspective suggests that we look at the fit between the needs of early adolescent students and the opportunities afforded them in the traditional junior high school environment. A poor fit would help explain the declines in motivation associated with the transition to junior high school.

An even more interesting way to use the person/environment fit perspective is to put it into a developmental framework. Hunt (1975) argued for the importance of adopting a developmental perspective on person-environment fit in the classroom. He stressed the need for teachers to provide the optimal level of structure for students' current levels of maturity -- an optimal level being that level that would pull students along a developmental path toward higher levels of cognitive maturity. He further argued that the type of structure needed would differ for different age groups. If we accept this notion that different types of educational environments may be needed for different age groups in order to meet developmental needs and to foster continued developmental growth, then it is also possible that some types of changes in educational environments may be especially inappropriate at certain stages of development, e.g., the early adolescent period. That is, they may be "developmentally regressive". Exposure to such changes at this age could lead to a particularly poor person-environment fit, and this lack of fit could account for some of the declines in motivation we see at this developmental period.

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In essence, this perspective suggests that it is the fit between the developmental needs of the adolescent and the educational environment that is important. Image two trajectories: one a developmental trajectory of student growth, the other a trajectory of environmental change across the school years. We believe there will be positive motivational consequences when these two trajectories are in synchrony with one another; in other words, when the environment is both responsive to the changing needs of the individual and offers the kinds of stimulation that will propel continued positive growth. In other words, transition to a facilitative and developmentally appropriate environment, even at this vulnerable age, should have a positive impact on children's perceptions of themselves and their educational environment. In contrast, negative motivational consequences will result if the two trajectories are out of synchrony. In this case, transition into a developmentally inappropriate educational environment should result in the types of motivational declines that have been identified as occurring with the transition into junior high school. This should be particularly true if the environment is developmentally regressive; that is, if it affords the children fewer opportunities for continued growth than previous environments.

This analysis offers potential insights into the impact of the junior high school transition on early adolescents' academic motivation. Is it possible that the most common changes in the academic environment following the transition to middle or junior high school are developmentally inappropriate for the development needs of the early adolescent period? Is there a developmental mismatch between maturing children and the classroom environments they experience before and after the transition - a mismatch that results in a deterioration in academic motivation and performance for some children? We

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think so. For example, several characteristics of the junior high school make it probable that junior high school teachers will hold different beliefs than elementary teachers. Junior high schools are typically larger, less personal, and more formal than elementary schools. Junior high school teachers are often subject matter specialists and they typically instruct a much larger number of students than do elementary teachers in self-contained classrooms, making it less likely they will come to know students well, to feel that they are trustworthy, and to grant them autonomy. Junior high school teachers may feel that it is difficult to affect the achievement of a large number of students, especially since they see them for a relatively small proportion of the school day, making it difficult to sustain feelings of efficacy. Junior high school is often seen as a time to get serious about instruction and performance evaluation. Assigning students to classes on the basis of their ability, particularly in mathematics, becomes much more frequent (Oakes, 1981). Once students have been assigned to classrooms on the basis of their ability, mobility to another ability level is infrequent (Metz, 1978; Oakes, 1981). This practice, coupled with increasing pressure to grade children on relative performance rather than on improvement or mastery, may engender a belief in teachers that difference in student ability are stable and teacher influences on student achievement are relatively minor. Finally cultural stereotypes about early adolescence may flourish in schools that serve only this age group. There is evidence that early adolescence is viewed by society as a particularly difficult and unproductive stage of life (Holmbeck & Hill, 1986; Lavigne, 1977; Miller, Eccles, Flanagan, Feldlaufer, & Goldsmith, 1990; Offer, Ostrov, & Howard, 1981). These societal views are not likely to engender feelings of efficacy or trust in those who work with early adolescents.

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We believe that these types of structural and "cultural" differences between elementary and junior high schools are likely to lead to developmentally inappropriate changes in a cluster of classroom-level organizational, instructional, and climate variables, including task structure, task complexity, grouping practices, evaluation techniques, motivational strategies, locus of responsibility for learning, and quality of teacher-student and student-student relationships. Furthermore, We believe that these types of changes are likely to contribute to the negative change in students' motivation and achievement-related beliefs assumed to coincide with the transition into junior high school.

Unfortunately, few empirical studies have focused on differences in the classroom or school environment across grades or school levels. The research on the education of this age group has been dominated by a concern for determining the best combination of grades for this age group and comparing the effects of middle and junior high schools. In most cases no attempt is made to assess the school and classroom environment. It is assumed that the middle and junior high school environment differ even though there is increasing evidence that many middle schools differ from junior high schools in name and grade organization only (Eccles, Lord, & Midgley, 1991). For example, in a recent analysis of data from the National Educational Longitudinal Study (NELS), Eccles, Lord, and Midgley (1991) found few differences between schools with a 7-8/9 grade configuration and schools with a 5/6-8 grade configuration in the teachers' and students' reports of their schools' environment. Not surprisingly, the students' motivation also did not differ across these two types of middle level school structures.

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In addition, most descriptive studies have focused on school level characteristics such as school size, degree of departmentalization, extent of bureaucratization, etc (see Eccles & Midgley, 1988 for review). Although differences on these characteristics can have important effects on teacher beliefs and practices and on student alienation and motivation, these linkages have rarely been assessed. In addition, the fact that most middle and junior high schools are departmentalized and most elementary schools consist of self-contained classrooms has made comparisons at the classroom level even more difficult.

What little research is available suggests the following conclusions regarding classroom-level differences between junior high schools and elementary schools. First, junior high school classrooms, as compared to elementary school classrooms, are characterized by a greater emphasis on teacher control and discipline, a less personal and positive teacher/student relationship, and fewer opportunities for student decision-making, choice, and self-management. Second, the shift to junior high school is associated with an increase in practices such as whole class task organization, between classroom ability grouping, and public evaluation of the correctness of work, each of which may encourage the use of social comparison and ability self-assessment. Third, junior high school teachers appear to use a higher standard in judging students' competence and in grading their performance than do elementary school teachers. And finally, there is even some evidence that class work during the first year of junior high school, particularly in general math classes, requires lower level cognitive skills than class work at the elementary level (see Eccles & Midgley, 1988 for details on these studies and references).

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These changes are likely to be particularly harmful at early adolescence given the developmental characteristics associated with this period of life. Table 3 summarizes the major developmental shifts that occur in conjunction with adolescent development. These changes include increases in the following: desire for autonomy, peer orientation, self-focus and self-consciousness, salience of identity issues, concern over heterosexual relationships, and capacity for abstract cognitive activity. Simmons & Blyth (1987) have argued that adolescents need a reasonably safe, as well as an intellectually challenging, environment to meet these developmental tasks - an environment that provide a "zone of comfort" as well as challenging new opportunities for growth. In light of these needs, the environmental changes often associated with transition to junior high school seem especially harmful in that they emphasize competition, social comparison, and ability self-assessment at a time of heightened self-focus; they decrease decision-making and choice at a time when the desire for control is growing; they emphasize lower level cognitive strategies at a time when the ability to use higher level strategies is increasing; and they disrupt social networks, and decrease the opportunity for close adult-child relationships to develop, at a time when adolescents are especially concerned with peer relationships and may be in special need of close adult relationships outside of the home. We believe the nature of these environmental changes coupled with the normal course of individual development will result in a developmental mismatch between the early adolescent and the classroom environment. This mismatch, in turn, should increase the risk of negative motivational outcomes. Furthermore, the fact that most junior high schools are larger, less personal, and that teachers must interact with so many more students, make it more likely that emerging motivational

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problems will go unnoticed and the student will be allowed to slide onto a negative developmental trajectory.

INSERT TABLE 3

Assessing these hypotheses is not likely to be easy. Demonstrating significant person-environment interactions has proven to be quite difficult. Nonetheless, we, like others in the field (e.g. Glaser, 1972; Mitchell, 1969), believe such interactions are important to our understanding of student motivation and performance. As Mitchell (1969) points out, one needs very good measures of the environment and appropriate outcome measures to adequately test these interactions. As noted earlier there are very few studies that have assessed classroom environments before and after the junior high school transition with sufficient care and specificity to allow a good test of our stage/environment fit hypotheses. Furthermore, few studies have taken seriously Mitchell's (1969) plea for theoretical analysis of the appropriate student outcomes and careful measurement of student outcomes. As we noted earlier, the varying motivational constructs listed in Table 1 should be sensitive to different types of environmental changes. Therefore, an appropriate test of these interactions requires a theoretical analysis of the appropriate environmental characteristics and student outcomes as well as sophisticated measurement strategies.

In order to provide a more sensitive test of our theories, we have conducted a large-scale two year, four wave longitudinal study of the impact of changes in the school and classroom environment on early adolescents' achievement-related beliefs, motives, values, and behaviors. The sample was drawn from twelve school districts located in middle income communities in southeastern Michigan. Because we had found the motivational declines to be most marked in mathematics (Eccles, Midgley, & Adler, 1984), we focused on this subject area. Mathematics

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teachers and their students were recruited: 95% of the eligible teachers and 79% of their students agreed to participate. Most, but not all, of these students made a transition from sixth grade in elementary school to seventh grade in junior high school during the course of the study. A total of 2501 students participated at all four waves of the study. Questionnaires were administered to students during the regular period for mathematics instruction for two consecutive days each wave (fall and spring of 1983/84 and fall and spring of 1984/85). In addition, a subset of math classrooms was observed by trained field staff for five consecutive days during late October or November each year.

Environmental Changes between Sixth and Seventh Grade:

Empirical Findings

Our first goal was to determine if there were differences in the beliefs and behaviors of the teachers students have for mathematics before and after the junior high school transition. We compared the beliefs of the teachers students had for mathematics before and after the transition (see Midgley, Feldlaufer, & Eccles, 1988, for a full description of this study). The sample included 107 sixth grade elementary teachers and 64 seventh grade junior high teachers. There are fewer seventh than sixth grade teachers because, at the junior high school level, each teacher instructs several sections of math. As predicted, seventh grade teachers believe students need to be disciplined and controlled more than do sixth grade teachers using a scale with items such as "it is often necessary to remind students that their status in school differs from that of teachers" and "students should not be permitted to contradict the statements of teachers in class". Similarly, seventh grade teachers rate students as less trustworthy than do sixth grade teachers on a scale containing items such as "most students will waste free

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time if they're not given something to do" and "students can (not) be trusted to correct their own tests". Finally, seventh grade teachers feel significantly less efficacious than do sixth grade teachers on a scale including items such as "I am certain I am making a difference in the lives of my students" and "there is really very little I can do to insure that most of my students achieve at a high level". This, by the way, was the biggest difference we found between the beliefs of our sixth and seventh grade teachers.

Similar patterns emerge for students' and observers' perceptions of the quality of student/teacher relationships before and after the transition (see Feldlaufer, Midgley, & Eccles, 1988, for a complete description of differences in the classroom environment before and after the transition based on student, teacher, and observer reports). Seventh grade post-transition math teachers were seen as less supportive, friendly, and fair than sixth grade pre-transition teachers by both observers and students. In addition, students, teachers, and observers reported an increase, after the transition, in between-classroom ability grouping, whole class instruction, and social comparison of grades, all of which may promote a focus on ability self-perceptions more than a focus on mastering the task.

Impact of Environmental Changes on Student Motivation

Our next goal was to assess the impact of these types of changes on children's academic motivation, in particular on the motivational constructs associated with the questions: "Can I succeed?" and "Do I want to succeed?" To accomplish this goal, we used the following analytic strategy: First, we selected a specific indicator of the classroom-level environment, e.g. teacher sense of efficacy or teacher-student relationship. We then used the four waves of data on each

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particular classroom environment variable to classify our students into four groups: A group that experiences relatively positive environments with regard to the particular construct under consideration during both their sixth and seventh grade; a group that experienced relatively negative environments during both their sixth and seventh grade; a group that experienced a positive environment during their sixth grade school year but moved into a relatively more negative environment during their seventh grade school year; and a group that experienced a relatively more negative environment during their sixth grade school year but moved to a more positive environment for their seventh grade school year. We then plotted the change in the student motivational constructs over the four waves of our study (two waves in the sixth grade and two waves in the seventh grade). If our hypotheses are correct, we should see a decline on the student motivational construct only for those students who moved from a relatively positive environment to a relatively more negative environment as they made the junior high school transition. In this section we summarize our finding with regard to the following three classroom-environmental changes: (a) teacher efficacy, (b) the warmth of the teacher-student relationship, and (c) prevalence of between classroom ability grouping in math.

Teacher Efficacy

Several studies suggest a relationship between teacher efficacy and student motivation. For example, Brookover et al., (1979) using schools as the unit of analysis, found negative correlations between teachers' sense of academic futility and students' self-concept of ability and self-reliance. A number of other studies have also found a positive relation between teacher efficacy beliefs and student achievement (e.g., Armor, Conry-Oseguera, Cox, King, McDonnell, Pascal, Pauly & Zellman, 1976; Brookover et al., 1979; Tracz & Gibson, 1987). These results suggest

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that the differences we found in our teachers' sense of efficacy before and after the transition to junior high school could contribute to the decline in students' beliefs about their academic competency and potential. Furthermore, given the group of students with whom teachers are likely to feel least efficacious, the lower achieving students should be most at risk for this effect. Finally, the student motivational constructs most likely to be influenced by this change are the constructs associated with question "Can I succeed?" (see Table 1).

To test these hypotheses, we divided our students into four groups based on median splits of their math teachers' ratings of their personal teaching efficacy (see Midgley, Feldlaufer, & Eccles, 1989 for full details). The largest group of students (559 out of the 1329 included in these analyses) moved from a high efficacy sixth grade math teacher to a low efficacy seventh grade math teacher. Another 474 students had low efficacy teachers both years, 117 moved from low to high efficacy teachers, and 179 had high efficacy teachers both years. Thus, fully 78% of our sample of children moved to a low teacher efficacy math classroom in the seventh grade.

As predicted, the students who moved from high efficacy to low efficacy teachers during the transition (the most common pattern) had on expectancies in math, lower perceptions of their performance in math, and higher perceptions of the difficulty of math at the end of their first year in junior high school than the students who had experienced either no change in teacher efficacy, or who had moved from low to high efficacy teachers. Also as predicted, teacher efficacy beliefs have a stronger impact on changes in low achieving students' beliefs than on changes in high achieving students' beliefs. By the end of the junior high school year, the beliefs of low achieving students who move from high to low

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efficacy teachers have declined quite dramatically. This effect is illustrated in Figure 2.

Insert Figure 2 about here

Teacher/Student Relationships

As reported earlier, we also found that student/teacher relationships deteriorate after the transition to junior high school (Midgley et al., 1989). Research on the effects of classroom climate indicates that the quality of student/teacher relationships is associated with students' academic motivation and attitudes toward school (e.g., Fraser & Fisher, 1982; Hartmut, 1978; Berndt & Hawkins, 1988; Moos, 1979, 1980; Trickett & Moos, 1974). We predicted that this decline would have its most powerful impact on motivational variables linked to subjective task value, i.e., interest, perceived usefulness, and perceived importance of math. We also predicted that this effect would be most evident among the lower achieving students since they have fewer intrinsic reasons to enjoy mathematics than the higher achieving students.

1301 of the students fell into one of the four change groups for this classroom-level environmental characteristic (see Midgley, Feldlaufer, & Eccles, 1989 for a full description of this study). As predicted, students who moved from elementary teachers they perceived to be low in support to junior high school teachers they perceived to be high in support shown an increase in their ratings of the intrinsic value of math in junior high school; in contrast, the students who moved from sixth teachers they perceived to be high in support to seventh grade teachers they perceived to be low in support showed a sharp decline in their ratings of the intrinsic value, and the perceived usefulness, and importance of math. Again we found evidence that low achieving students were particularly at

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risk for declining motivation when they moved to less facilitative classroom environments after the junior high school transition. These results are illustrated in Figure 3.

Insert Figure 3 about here

Between Class Ability Grouping

As noted earlier, we also found an increase in the extent to which students are tracked by ability in different math class. It is not entirely clear what impact one would predict this increase would have on students' motivation. On the one hand, because it makes ability salient and because there is greater value attached to having high rather than low ability, one might predict that between class ability grouping would have a positive effect on the motivation of the higher ability students and a negative impact on the motivation of the lower ability students. On the other hand, social comparison theory suggests the opposite prediction. Since between class ability grouping narrows the range of the ability of the students in one's class, one might expect an initial decline in the self-evaluations of the high ability students and an initial increase in the self-evaluations of the lower ability students. However, over time, as the fact of being labeled as relatively good or bad in math by the kind of math class to which one is assigned becomes clearer, one might expect these initial changes to reverse, especially if lower ability students are given the impression that the teachers don't think they can learn complex math. In addition, several studies have suggested that there is a difference in the quality of teaching, as well as the level of instruction, between low and high ability math classroom (e.g., Alexander & McDill, 1976; Oakes, 1985)--with students placed in the low ability math classrooms receiving inferior quality teaching. If this is true, then over time, the students placed in low ability math classes should

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fall farther and farther behind in terms of their level of mastery and should become increasingly less confident in their ability to learn mathematics.

To test these hypotheses, we selected four groups from our sample based on their experience with ability grouping in the sixth and seventh grades (see Reuman, Mac Iver, Eccles, & Wigfield, 1987 for details). All four groups of students were in heterogeneously grouped sixth grade math classes. In the seventh grade, one group was placed in a high ability math class, one group was placed in a regular ability math class, one group was placed in a low ability math class, and the final group was placed in a heterogeneously grouped math class. The results for students' ratings of their math ability are shown in Figure 4. As social comparison theory would predict, being placed in a high ability class led to an initial lowering of students' self-concept of math ability. In contrast, being placed in a low ability class led to an initial increase in students' self-concept of math ability. Being placed in a regular ability class or in a heterogeneously grouped class had no effect on students' self-concept of math ability.

Insert Figure 4 about here

These results suggest that being segregated into different math classrooms according to one's relative competence does not have a negative effect on the students placed in the low ability classrooms. But what happens over time. We have now followed these students into high school (see Fuligni, Eccles, & Barber, 1991 for details). By the tenth grade, the students placed in the low ability math classrooms in grade seven are performing significantly lower than students with same level of competence in the seventh grade placed in heterogeneously grouped math classrooms. They are also more likely to be involved in problem behavior than students of comparable ability placed in heterogeneously grouped

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math classrooms. Clearly, over time, there are negative consequences associated with being assigned to low ability math classes rather than heterogeneously grouped math classrooms in the seventh grade.

Summary. Each of these studies show that it is not inevitable that children suffer a decline in their motivational orientation to math when they make the junior high school transition, rather classroom environment factors, such as the quality of the student/teacher relationship, influence the direction of the change in their beliefs and self-perceptions. They clearly indicate that, to the extent that middle school and/or junior high school classroom can be designed appropriately, the declines we often see in early adolescents' academic motivation can be avoided. These studies, however, do not directly test our stage/environment fit hypothesis. Two studies relevant to this hypothesis are summarized in the next section.

Stage-Environment Fit

We have just completed several sets of analyses that test our developmental approach to person-environment fit more explicitly (see Midgley & Feldlaufer, 1987 and Mac Iver, Klingel, & Reuman, 1986 for a full description of these studies). In a sample of 2210 students and their teachers in 117 pre-transition and 137 post-transition classrooms, Midgley and Feldlaufer (1987) assessed student and teacher perceptions of actual decision-making opportunities in the classroom and those they thought students ought to have. Yoked pairs of items developed by Lee and his colleagues (Lee, Statuto, & Kedar-Voivodas, 1983) were used to assess actual and preferred decision-making opportunities in five areas in which students might be allowed to help make classroom policy. For example:

For students: Do you help decide what math you work on during class?

Should you have a say about this?

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For teachers: Do your students have a say about what math they work on during class?

Do you think students should have a say in this?

As expected, students express a desire for more input into decision-making after they move to the junior high school. Unfortunately, both students and teachers say that students have fewer decision-making opportunities after the transition than before; thus there is a growing lack of congruence between students' desires and the opportunities afforded by the environment.

As outlined earlier, person-environment fit theory suggests that this increasing mismatch between students' desires and the opportunities afforded by the environment will result in a decline in motivation and engagement. More specifically, given the general developmental progression toward desire for greater independence and autonomy during the early adolescent period (Lee et al., 1983), we predicted that students experiencing a decrease in their opportunities for participation in classroom decision-making, coupled with an increasing desire for such opportunities, should evidence a greater decline in their interest in the subject matter being studied than other students (Eccles et al., 1984; Eccles & Midgley, 1990; Mac Iver, Klingel, & Reuman, 1986). In a longitudinal analysis of the Lee et al. (1983) items, Mac Iver and Reuman (1988) tested this prediction. Mac Iver and Reuman compared the changes in intrinsic interest in math of students reporting different patterns of change in their responses to the actual and preferred decision-making items across the junior high school transition. Consistent with this prediction, the students who perceived their seventh grade math classrooms as putting greater constraints on their preferred level of participation in classroom decision-making than their sixth grade math classrooms show the largest and most consistent declines in

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their interest in math between the sixth and seventh grade. These are precisely the students who are experiencing the type of developmental mismatch we outlined earlier.

Summary and Discussion of the Impact of Changing Educational Environments on Early Adolescent Development and of the Methodological Issues Raised by Our Studies

The work summarized here has begun to provide an in-depth description of the types of classroom environmental changes experienced by large numbers of children as they make the transition from elementary school to junior high school. In general, we have found evidence of the types of changes we had predicted; namely, an increase in teacher control, a decrease in teacher efficacy and in the quality of teacher/student relationships, and an increase in between classroom ability grouping. We have also begun to assess the impact of these changes on student motivation using a quasi-experimental approach. These results both confirm the negative consequences of these types of changes and provide evidence that a different type of change would produce positive motivational changes at this developmental period. Together these two outcomes support our suggestion that the declines in motivation often assumed to be characteristic of the early adolescent period are less a consequence of the students' developmental stage than of the mismatch between the students' needs and the opportunities afforded them in the junior high school. Clearly much more work needs to be done to provide solid evidence in support of this hypothesis. But this type of work is very difficult to do. Below we outline a number of methodological concerns that investigators need to take into account if their studies are to move this line of inquiry forward significant ways.

Motivation of Early Adolescents

Methodological Consideration

A number of investigators are currently examining the effect of the transition to junior high school on early adolescent development. We believe our study points to the importance of including teacher and classroom variables in these studies. We need careful descriptions of these environments if we are to interpret discrepancies across studies and if we are to understand the origins of any changes in student outcomes associated with these transitions. This plea is, of course, equally applicable to studies of children undergoing school transitions at any age.

We also recommend that developmental studies look across broader ages and stages, carefully documenting changes in both student motivation and environmental variables across the public school years. Although we have framed our predictions in a stage/environment fit perspective, we have only studied one developmental period in this work. Our approach suggests that some of the changes we have identified ought to have more dramatic effects on student motivation during adolescence than at earlier periods of development. Similar measures of children making comparable school transitions at various ages are needed to fully test this hypothesis. However, school transitions are far more likely to occur at early adolescence than at earlier developmental periods. Such studies are needed if we are to fully understand the role of developmental stage in the interaction between environment and motivation.

To fully understand environmental effects on motivation, it will also be important to seek out schools and classrooms that vary on key environmental characteristics. This is not always possible to do. Although it was our goal to select school districts that varied in classroom practices such as method of

Motivation of Early Adolescents

evaluation, task organization, and opportunities for student input, ability grouping was the only characteristic that provided any systematic variation between schools. Other investigators have commented on the problem this lack of variation presents for researchers (McPartland & Karweit, 1979). We must not only understand the effects of what is most prevalent in classrooms, but also try to determine what the most facilitative environments are even if they are uncommon. Having identified possible examples of the most facilitative classroom environments, it will be important to use the type of quasi-experimental longitudinal approach used in the teacher efficacy and teacher relations studies to test the impact of these environments on the nature of change in student motivation. Then we can begin to understand not only the effects of the most prevalent types of environmental change (i.e., moving to a less positive student/teacher relationship during the transition to junior high school) but also the effects of less frequently occurring changes (i.e., moving to a more positive teacher/student relationship, which has a facilitative effect on student values).

We also recommend that investigators assess both the actual environment and the preferred environment in developmental studies as we did in the decision-making studies (Mac Iver et al., 1986; Mac Iver & Reuman, 1988; Midgley & Feldlaufer, 1987). This will enable us to chart developmental changes in students' preferences and to assess changes in the fit between the actual environment and the preferred environment over time. Fraser (1981) has developed the Individualized Classroom Environment Questionnaire (ICEQ) that measures student and teacher perceptions of actual and preferred classroom learning environments along dimensions that differentiate individualized classrooms from conventional ones. Three broad dimensions are covered including the Relationships Dimension (nature and intensity of personal

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relationships), Personal Development Dimensions (basic directions along which personal growth and self-enhancement tend to occur), and System Maintenance and System Change Dimensions (extent to which the environment is orderly, clear in expectation, maintains control, and is responsive to change). The ICEQ has been used in both elementary and secondary school classrooms. It would be useful now to use it in more longitudinal studies of change in students' preferences in conjunction with change in classroom environments.

We used observers ratings as well as student and teacher perceptions of the classroom environment. The decision to use three sources to assess the classroom environment grew out of several concerns. Although some researchers believe that "neutral" observers provide a more objective assessment of the classroom environment, others believe that classroom participants (students and/or teachers) are more sensitive to long standing attributes of the environment (e.g., Fraser & Walberg, 1981; Moos, 1980). Observer perceptions were considered important for two reasons. First, students are undergoing both physiological and social role changes that might affect their perceptions. It could be argued that student perceptions are affected by these changes and do not reflect real differences in the classroom environment. Second, the pre-transition teachers are a different group of teachers than the post-transition teachers. It could be argued that elementary and junior high school teachers perceive similar classrooms differently. Both student and teacher perceptions were included because classroom assessments by these two groups have been found to differ in systematic ways (e.g., Fisher & Fraser, 1983; Fraser & O'Brien, 1985; Moos, 1979, 1980) and it was considered important to get both perspectives. However, we agree in general with those who place high value on student perceptions, particularly in studies that link the classroom environment to student outcomes.

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Finally, multiple sources were also used because some questions are asked more appropriately of one source than another. For example, teachers and students are better sources than observers of information about semester-long grading practices. Likewise, observers and students are better sources than teachers for information about the warmth, friendliness, and fairness of teachers. Having used all of these sources, we can now reflect on the need for gathering information from so many sources. Although we felt it was essential to have observers' ratings, our findings suggest that they are not necessary. We get comparable results using teacher and student reports; and these are much less expensive to gather. We do, however, think it is critical to include both student and teacher measures.

In addition to perceptions of the classroom environment, we suggest that measures of teachers' beliefs can give us some insight into the belief systems that underlie teacher behaviors. In our studies, sixth and seventh grade teachers' beliefs clearly differ and these differences affect student motivation. For example, as shown in the teacher efficacy study (Midgley et al, 1989), differences in the beliefs of pre- and post-transition teachers are causally related to changes in students' self- and task perceptions in mathematics. Why do seventh grade teachers have such a negative view of their students and of their own efficacy? Are there other belief systems that underlay these perceptions? We have become very interested in the impact of teacher stereotypes about adolescence (see Midgley et al., 1989 for a discussion of this issue). Seventh grade teachers believe that early adolescence is a difficult time of life for children and their teachers, and those with the most teaching experience endorse this belief most strongly (Miller, et al., 1990) Why? It may be that negative stereotypes flourish in schools that are exclusively for early adolescents and influence other teacher beliefs and

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teacher behaviors. This may account for some of the differences found between seventh graders in K-8 systems and 7-9 systems.

Our study focused on mathematics teachers and mathematics instruction. We believe that some of the classroom environment changes that are counter to healthy adolescent development occur first in math classes. However, this is yet to be documented. Studies similar to ours should be conducted in other subject matter areas, and careful comparisons should be made across subject matter areas. In any studies comparing elementary and junior high school classrooms, or looking at the transition to junior high school, it is important to focus on specific subject matter areas for both motivational and environmental variables since most junior high schools are departmentalized.

Implications for Designing Middle Level Education

Research on the effects of school transitions during early adolescence can and should have an effect on educational policy. Several of the more recent transition studies provide us with information about which students are most vulnerable to negative transition effects in order to provide them with resources that will help them cope with the change. We hope that there will also be an emphasis on identifying the kinds of changes in the school and classroom environment that are facilitative or debilitating at this stage of life, particularly to high risk children, in order to make recommendations for change to school people. In addition, studies that look at the role of peer relations in moderating transition effects provide useful information (e.g. Berndt & Hawkins, 1988) but we hope that if positive peer relationships provide a buffer, attention will be paid to how we provide an opportunity for peer interactions to flourish in schools for early adolescents.

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We are frequently asked for our recommendations regarding the restructuring of middle years education. A simple and truthful answer would be to say that the K-8 system has many advantages for early adolescents but that is not the message we wish to convey. When we recommend a return to the K-8 system we are shifting the emphasis away from the classroom environment and are again focusing on grade ranges and time of transition. For example, we now know that changes in the student/teacher relationship across the transition to junior high school affect students' motivation and values, at least in the mathematics domain. Certainly most K-8 systems are smaller and more personal than junior high schools, but that's not essential to the K-8 organization - it could be larger and less personal. We recommend that serious efforts be made to improve the student/teacher relationship in schools that serve early adolescents regardless of the grades included in the schools. We are also in a position to recommend that attention be given to providing an environment that will increase the efficacy beliefs of teachers of early adolescents. As our studies continue we will be in a position to make other recommendations regarding ability grouping, opportunities for decision-making, decision-making congruence, standards used for grading, and other classroom and teacher characteristics for early adolescents.

Over the years our understanding of motivation has been enhanced and expanded as researchers develop new theories and test their validity. We believe that a stage-environment fit paradigm will provide a new theoretical framework from which to view motivational change.

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MOTIVATION: A STUDENT'S VIEW

MOTIVE/AFFECTIVE STATE	CAN I SUCCEED?	DO I WANT TO SUCCEED AND WHY?	WHAT DO I NEED TO DO?
Effecence Motive	Self-Concept of Ability	Effecence Motive	Task Focus/Mastery
Need Achievement	Expectations for Future Success	Incentive Value	Orientation versus Self/Ego Focus
Fear of Failure	Perceived Control	Attainment Value	Attention
Hope for Success	Learned Helplessness	Utility Value	Cognitive Strategies
Test Anxiety	Attributional Patterns	Intrinsic/Interest Value	Anxiety
Competence Motivation	Self-Worth	Cost of Success	Task Goals
Motivational Goals	Personal Efficacy	Cost of Failure	Autonomous Learning Behaviors
	Effecence Motivation	Conflicting Goals	Learning Strategies
		Loss of Valued Alternatives	Help-Seeking Strategies
		Anticipated Effort	Self-Monitoring/Self-Regulated Learning
		Perceived Task Difficulty	Adaptive Learning
		Extrinsic Rewards/Costs	Motivated Learning
			Resource Management Strategies
			Metacognitive Strategies

Table 2

**Changes in Motivation
Associated with
Junior High School Transition**

Decline in General Interest in School

**Increase in Extrinsic Motivational Orientation for
School Work**

**Decrease in Intrinsic Motivational Orientation
for School Work**

Decline in General Self-Esteem

**Decline in Confidence in Some Academic
Disciplines**

**Decline in Subjective Task Value attached to
Some Academic Subjects**

**Increase in Anxiety and in the relationship
of Anxiety to School Performance and Intrinsic
Motivation**

**Decrease in the Relationship between Academic
Performance and Confidence in One's Academic
Abilities**

**Increase in Confusion regarding the Causes of
One's Academic Performance**

Increase in Self-Focused Motivation

**Increase in Endorsement of View that Academic
Abilities are Stable**

Table 3

**DEVELOPMENTAL CHARACTERISTICS
OF EARLY ADOLESCENTS**

Increased Desire for Autonomy

Increased Salience of Identity Issues

**Continuing Need for Safe Environment in
which to Explore Autonomy and Identity**

Increased Peer Orientation

Increased Self-Focus and Self-Consciousness

**Increased Cognitive Capacity with Movement
toward Formal Operational Thought**

**Physical and Hormonal Changes associated
with Pubertal Development**

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Figure Captions

Figure 1. Students' Self and Course Ratings as a Function of Subject Area and Grade Level.

Figure 2. Changes in Perceived Current Level of Performance in Mathematics for Low Achieving Students as a Function of Pattern of Difference between Sixth and Seventh Grade Teachers' Sense of Efficacy.

Figure 3. Changes in Students' Ratings of the Intrinsic Value of Mathematics as a Function of Pattern of Difference between Sixth and Seventh Grade Teachers' Perceived Supportiveness to Students.

Figure 4. Changes in Students Ratings of Own Math Ability as a Function of Pattern of Change in Sixth and Seventh Grade Ability Grouping Experience.

STUDENT RATING

3.5 4.0 4.5 5.0 5.5

5 6 7 8 9 10 11 12

GRADE

Task Difficulty

Ability

Value

At School

STUDENT RATING

3.5 4.0 4.5 5.0 5.5

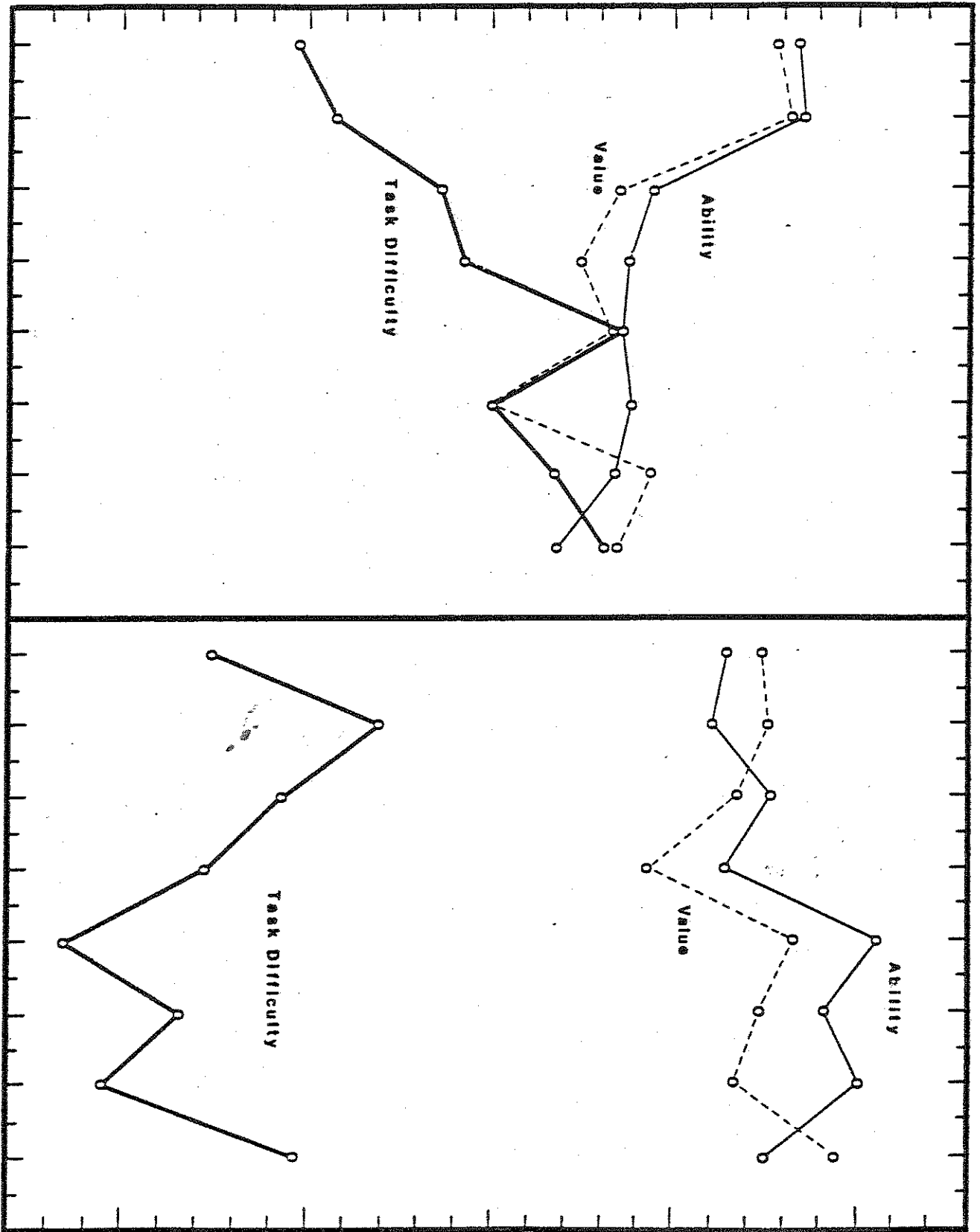
5 6 7 8 9 10 11 12

GRADE

Task Difficulty

Ability

Value



PERCEIVED PERFORMANCE IN MATHEMATICS FOR LOW ACHIEVING STUDENTS

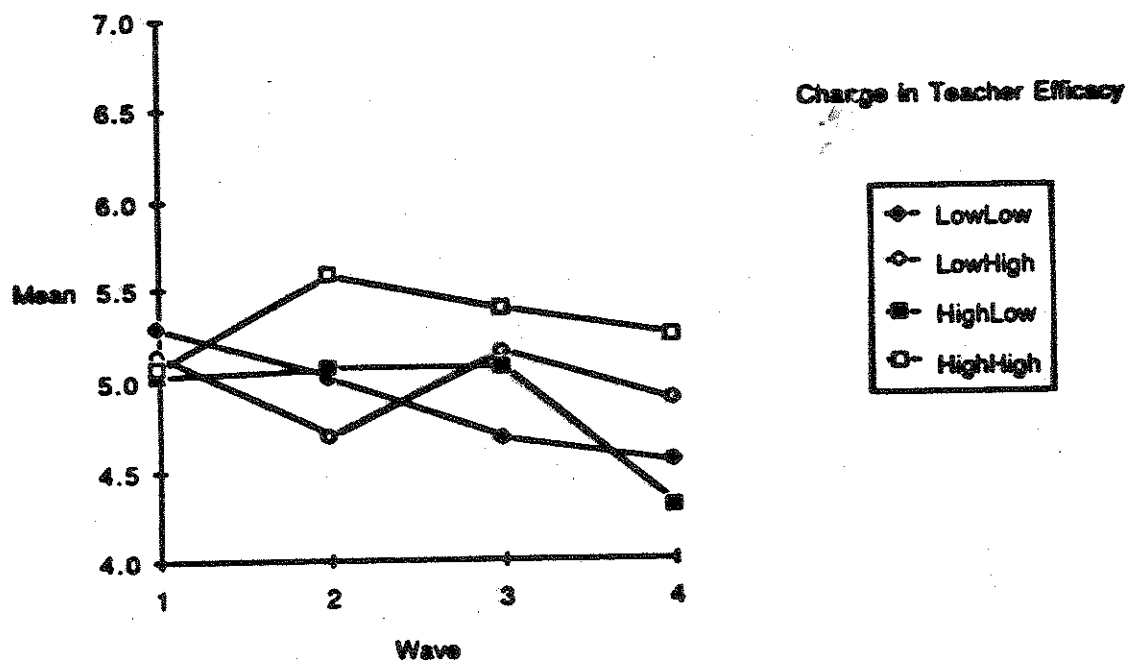


Figure 2

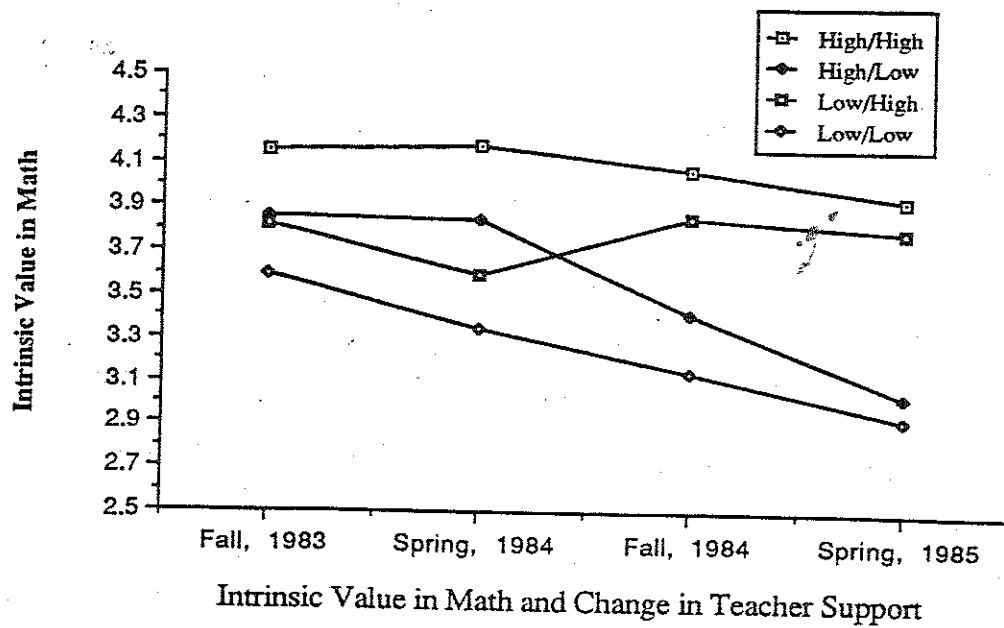


Figure 3

Figure 4

SELF CONCEPT OF MATH ABILITY
FOR STUDENTS EXPERIENCING NO GROUPING YEAR 1
AND BETWEEN-CLASSROOM GROUPING YEAR 2

